DATA VALIDATION REPORT

PROJECT: Stormwater, Sandblast AOPC, Bradford Island, Cascade Locks, OR
LABORATORY: Katahdin Analytical and Eurofins TestAmerica Seattle
MATRIX: Stormwater
SAMPLING DATE(S): June 7, 2019
SAMPLING EVENT(s): Stormwater Sampling
REPORT DATE: Revision 1: May 4, 2020 (Original: September 16, 2019)
Validator: Jacob Williams

Revision Notes: Revision 1 has the following changes from the original Final document:
1) Corrected table in Section 1, Introduction.
2) Updated flagging for dissolved zinc (Section 2.4). The UJ flag is maintained, but the laboratory's numerical value is reported, instead of the numerical value of the LOQ.
3) Sections 11 and 12 are added.

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1. Introduction

The following is a data validation report for stormwater samples collected on June 7, 2019 from the storm drain system in the Sandblast Area of Potential Concern (AOPC) on Bradford Island, in Cascade Locks, OR. The sample data groups (SDG), analytes measured, methods used, and the laboratory information is provided below:

Sample Data Group (SDG)	No. of Samples	Matrix	Analyte(s)	Method	Validation Level
Katahdin SM5732	2	Stormwater	Metals	200.8	Stage 2b (S2BVM)
			Mercury	7470	
			SVOCs	8270D SIM	
			Pesticides	8081B	
			Dissolved Organic Carbon	SM 5310B	
			Total Suspended Solids	SM 2540D	
			Total Hardness	200.8	
Eurofins TestAmerica[1] 580-86755	2	Stormwater	PCB Congeners	1668A	Stage 2b (S2BVM)
			PAHs	8270D SIM	
			Total Organotins	PSEP/Krone Method	
			Gas Range Organics	NWTPH-Gx	
			Diesel Range Organics	NWTPH-Dx	

[1]Eurofins TestAmerica Seattle is a subcontractor for Katahdin.

The field sample identification numbers, sampling dates, locations, and corresponding laboratory identification numbers are listed in Table 1 (end of report).

Sample analyses were evaluated to level Stage 2B data validation. Stage 2B validation of the laboratory analytical data package consists of verification and validation based on completeness and compliance checks of sample receipt conditions and both sample-related and instrument-related QC results.

Analytical results are qualified based on the definitions and use of qualifying flags in the following resources:

- Department of Defense (DoD) Quality Systems Manual for Environmental Laboratories, Version 5.3 (DoD, 2019)
- DoD General Data Validation Guidelines (DoD, 2018a, 2018b)
- United States Environmental Protection Agency (USEPA) Guidance for Labeling Externally Validated Data for Superfund Use (USEPA, 2009)
- USEPA National Functional Guidelines (NFGs) for Superfund Data Review (USEPA, 2016, 2017a, 2017b)

Definitions for limits and flags are given in Table 2. All detected concentrations less than the Limit of Quantitation (LOQ) are reported at their detected value but flagged J for estimated. Non-detects are reported at the Limit of Detection (LOD) and flagged U for undetected.

The validated data is presented in Table 3. Some data may be qualified using the reviewer's professional judgment. The conclusions presented herein are based on the information available for the review.

2. Metals Data Review, ICP-MS, Method 6020A

2.1 Stage 1 Review

Reviewed Item	Determination	Requirements/Comments
Sample Custody	SATISFACTORY	All samples received under proper chain of custody. • Sampled: 07 June 2019 between 09:35 and 09:51 • Relinquished at FedEx: 7 June 2019 at 11:54 • Arrived at Katahdin: 8 June 2019 at 09:50
Temperature	SATISFACTORY	Temperature 4 ± 2 °C Temperature at arrival: 4.7 °C
Holding Time	SATISFACTORY	Holding time for aqueous samples is 6 months. Samples for dissolved metals were filtered at the laboratory. Per EPA, hold time for metals to be filtered, and then acid preserved, or analyzed without acid preservation is 14 days (EPA 2016). • Sampled: 7 June 2019 • Digested: 11 June 2019 (4 days) • Analyzed: 13 June 2019 (2 days)
Dilution	INFORMATION ONLY	No samples were diluted.

2.2 Stage 2a Review

Reviewed Item	Determination	Requirements/Comments
Method Blank (MB)	SATISFACTORY	• Perform one per preparatory batch. • The absolute values of all analytes must be < ½ LOQ or < 1/10th the amount measured in any sample or 1/10th the regulatory limit, whichever is greater.
Laboratory Control Sample (LCS), LCS Duplicate (LCSD), and Relative Percent Difference (RPD)	SATISFACTORY	• Perform one per preparatory batch. • Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan. • Specified: Lab in-house limits • RPD of all analytes ≤ 20% (between LCS and LCSD). • LCSD/RPD not necessary by Table B-9.
Matrix Spike (MS), Matrix Spike Duplicate (MSD), and Relative Percent Difference (RPD)	SATISFACTORY	• Perform one per preparatory batch. • Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan. • Specified: Lab in-house limits • RPD of all analytes ≤ 20% (between MS and MSD). • Dilution test and post digestion spike are required if MS or MSD fails.

Reviewed Item	Determination	Requirements/Comments
Compound Identification and Quantitation	SATISFACTORY	• Compounds are identified and quantified automatically by the instrument. • Manual integration of one or more chromatographic peaks may be required to correct integration performed by the instrument. • All cases where manual review and integration of the chromatograms was required were initialed and dated by the reviewer in the data package. • Was manual integration performed? (Y/N): N
Field Duplicates (FD)	NA	• RPD of all analytes ≤ 30% (between sample and FD), or as specified by project limits. • Were FDs collected? (Y/N): N
Filter Blank	**See Qualification Summary Table**	• One filter blank is performed to perform quality control on the filtration that is performed for dissolved metals analysis. • No requirements or guidelines per DoD/DOE QSM • Professional judgment is used to qualify data based on detections in the filter blank.

2.3 Stage 2b Review

Reviewed Item	Determination	Requirements/Comments
Linear Dynamic Range (LDR) or High-Level Check Standard	SATISFACTORY	• Perform at initial set-up and checked every 6 months with a high standard at the upper limit of the range. • Within ± 10% of true value.
Tuning	SATISFACTORY	• Perform prior to ICAL. • Mass calibration ≤ 0.1 amu from true value • Resolution < 0.9 amu full width at 10% peak height.
Initial Calibration (ICAL) for All Analytes	SATISFACTORY	• Daily ICAL prior to sample analysis. • If more than one calibration standard is used, $r^2 \geq 0.99$.
Initial Calibration Verification (ICV)	SATISFACTORY	• Perform once after each ICAL, analysis of a second source standard prior to sample analysis. • All reported analytes within ± 10% of true value.
Continuing Calibration Verification (CCV)	SATISFACTORY	• Perform after every 10 field samples and at the end of the analysis sequence. • All reported analytes within ± 10% of the true value.
Low-Level Calibration Check Standard (LLCCV)	SATISFACTORY	• Perform daily. • All reported analytes within ± 20% of the true value.
Internal Standards (IS)	SATISFACTORY	• Perform every field sample, standard and QC sample. • IS intensity in the samples within 30-120% of intensity of the IS in the ICAL blank.
Initial and Continuing Calibration Blank (ICB/CCB)	ICB: SATISFACTORY CCB: SATISFACTORY	• Perform immediately after the ICV and immediately after every CCV. • The absolute values of all analytes must be < ½ LOQ or < 1/10th the amount measured in any sample.
Interference Check Solution (ICS)	SATISFACTORY	• Perform after ICAL and prior to sample analysis. • ICS-A: Absolute value of concentration for all non-spiked project analytes <1/2 LOQ (unless they are a

		verified trace impurity from one of the spiked analytes); • ICS-AB: Within ± 20% of true value.

2.4 Qualification Summary Table

SDG	Sample Affected	Analyte	Flag	Notes
SM5732	OF1, OF2	Zinc, dissolved	UJ (all detects)	The filter blank for dissolved metals had a detection of zinc that was larger in concentration than detected in the two primary samples (all three detections were > LOQ). Results were flagged as non-detect at the numerical value reported by the laboratory.

3. Mercury Data Review, AA, Method 7470A

3.1 Stage 1 Review

Reviewed Item	Determination	Requirements/Comments
Sample Custody	SATISFACTORY	All samples received under proper chain of custody. • Sampled: 07 June 2019 between 09:35 and 09:51 • Relinquished at FedEx: 7 June 2019 at 11:54 • Arrived at Katahdin: 8 June 2019 at 09:50
Temperature	SATISFACTORY	Temperature 4 ± 2 °C Temperature at arrival: 4.7 °C
Holding Time	SATISFACTORY	Holding time for aqueous samples is 6 months. • Sampled: 7 June 2019 • Digested: 11 June 2019 (4 days) • Analyzed: 13 June 2019 (2 days)
Dilution	INFORMATION ONLY	No samples were diluted.

3.2 Stage 2a Review

Reviewed Item	Determination	Requirements/Comments
Method Blank (MB)	SATISFACTORY	• Perform one per preparatory batch. • The absolute values of all analytes must be < ½ LOQ or < 1/10th the amount measured in any sample or 1/10th the regulatory limit, whichever is greater.
Laboratory Control Sample (LCS), LCS Duplicate (LCSD), and Relative Percent Difference (RPD)	SATISFACTORY	• Perform one per preparatory batch. • Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan. • Specified: Lab in-house limits • RPD of all analytes ≤ 20% (between LCS and LCSD). • LCSD/RPD not necessary by Table B-9.

Reviewed Item	Determination	Requirements/Comments
Matrix Spike (MS), Matrix Spike Duplicate (MSD), and Relative Percent Difference (RPD)	SATISFACTORY	• Perform one per preparatory batch. • Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan. • Specified: Lab in-house limits • RPD of all analytes ≤ 20% (between MS and MSD). • Dilution test and post digestion spike are required if MS or MSD fails.
Compound Identification and Quantitation	SATISFACTORY	• Compounds are identified and quantified automatically by the instrument. • Manual integration of one or more chromatographic peaks may be required to correct integration performed by the instrument. • All cases where manual review and integration of the chromatograms was required were initialed and dated by the reviewer in the data package. • Was manual integration performed? (Y/N): N
Field Duplicates (FD)	NA	• RPD of all analytes ≤ 30% (between sample and FD), or as specified by project limits. • Were FDs collected? (Y/N): N
Filter Blank	SATISFACTORY	• One filter blank is performed to perform quality control on the filtration that is performed for dissolved metals analysis. • No requirements or guidelines per DoD/DOE QSM • Professional judgment is used to qualify data based on detections in the filter blank.

3.3 Stage 2b Review

Reviewed Item	Determination	Requirements/Comments
Initial Calibration (ICAL) for All Analytes	SATISFACTORY	• Daily ICAL prior to sample analysis. • If more than one calibration standard is used, $r^2 \geq 0.99$.
Initial Calibration Verification (ICV)	SATISFACTORY	• Perform once after each ICAL, analysis of a second source standard prior to sample analysis. • All reported analytes within ± 10% of true value.
Continuing Calibration Verification (CCV)	SATISFACTORY	• Perform after every 10 field samples and at the end of the analysis sequence. • All reported analytes within ± 10% of the true value.
Low-Level Calibration Check Standard (LLCCV)	SATISFACTORY	• Perform daily. • All reported analytes within ± 20% of the true value.
Initial and Continuing Calibration Blank (ICB/CCB)	ICB: SATISFACTORY CCB: SATISFACTORY	• Perform immediately after the ICV and immediately after every CCV. • The absolute values of all analytes must be < ½ LOQ or < 1/10th the amount measured in any sample.

3.4 Qualification Summary Table

No data was qualified based on validation.

4. SVOCs Data Review, GC/MS, Method 8270D Selected Ion Mode (SIM)

4.1 Stage 1 Review

Reviewed Item	Determination	Requirements/Comments
Sample Custody	SATISFACTORY	All samples received under proper chain of custody. • Sampled: 07 June 2019 between 09:35 and 09:51 • Relinquished at FedEx: 7 June 2019 at 11:54 • Arrived at Katahdin: 8 June 2019 at 09:50
Temperature	SATISFACTORY	Temperature 4 ± 2 °C Temperature at arrival: 0.2 °C Note: Temperature of cooler is below 2 °C, but samples were not frozen, which is acceptable.
Holding Time	SATISFACTORY	Holding time for aqueous samples is 14 days. • Sampled: 7 June 2019 • Extracted 12 June 2019 (5 days) • Analyzed: 13 June 2019 (1 day)
Dilution	INFORMATION ONLY	No samples were diluted.

4.2 Stage 2a Review

Reviewed Item	Determination	Requirements/Comments
Method Blank (MB)	SATISFACTORY	• Perform one per preparatory batch. • No analytes detected > ½ LOQ or > 1/10th the amount measured in any sample or 1/10th the regulatory limit, whichever is greater. • Common contaminants must not be detected > LOQ.
Laboratory Control Sample (LCS)	**See Qualification Summary Table**	• Perform one per preparatory batch. • Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan. • Specified: Lab in-house limits
Matrix Spike (MS), Matrix Spike Duplicate (MSD), and Relative Percent Difference (RPD)	**See Qualification Summary Table**	• Perform one per preparatory batch. • Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan. • Specified: Lab in-house limits • RPD of all analytes ≤ 20% (between MS and MSD).
Surrogate Spike	SATISFACTORY	• Perform for all field and QC samples. • Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan.
Compound Identification and Quantitation	SATISFACTORY	• Compounds are identified and quantified automatically by the instrument. • Manual integration of one or more chromatographic peaks may be required to correct integration performed by the instrument. • All cases where manual review and integration of the chromatograms was required were initialed and dated by the reviewer in the data package. • Was manual integration performed? (Y/N): Y

Reviewed Item	Determination	Requirements/Comments
Field Duplicates (FD)	NA	• RPD of all analytes ≤ 30% (between sample and FD), or as specified by project limits. • Were FDs collected? (Y/N): N

4.3 Stage 2b Review

Reviewed Item	Determination	Requirements/Comments
Tune Check	SATISFACTORY	• Perform prior to ICAL and prior to each 12-hour period of sample analysis. • Mass Specific ion abundance criteria of BFB or DFTPP from method.
Performance Check (Method 8270 only)	SATISFACTORY	• Perform at the beginning of each 12-hour period, prior to analysis of samples. • Degradation ≤ 20% for DDT. • Benzidine and pentachlorophenol shall be present at their normal responses and shall not exceed a tailing factor of 2.
Initial Calibration (ICAL) for All Analytes Including Surrogates	SATISFACTORY	• Perform at instrument set-up and after ICV or CCV failure, prior to sample analysis. • Each analyte must meet one of the three options below: Option 1: RSD for each analyte ≤ 15%; Option 2: linear least squares regression for each analyte: r2 ≥ 0.99; Option 3: non-linear least squares regression (quadratic) for each analyte: r2 ≥ 0.99.
Retention Time window position establishment	SATISFACTORY	• Perform once per ICAL and at the beginning of the analytical sequence. • Position shall be set using the midpoint standard of the ICAL curve when ICAL is performed. • On days when ICAL is not performed, the initial CCV is used.
Evaluation of Relative Retention Times (RRT)	SATISFACTORY	• Perform with each sample. • RRT of each reported analyte within ± 0.06 RRT units.
Initial Calibration Verification (ICV)	SATISFACTORY	• Perform once after each ICAL, analysis of a second source standard prior to sample analysis. • All reported analytes within ± 20% of true value.
Continuing Calibration Verification (CCV)	SATISFACTORY	• Perform daily before sample analysis; after every 12 hours of analysis time; and at the end of the analytical batch run. • All reported analytes and surrogates within ± 20% of the true value. • All reported analytes and surrogates within ± 50% for end of analytical batch CCV.
Internal Standards (IS)	SATISFACTORY	• Perform every field sample, standard and QC sample. • Retention time within ± 10 seconds from retention time of the midpoint standard in the ICAL; EICP area within – 50% to +100% of ICAL midpoint standard. • On days when ICAL is not performed, the daily initial CCV can be used.

4.4 Qualification Summary Table

SDG	Sample Affected	Analyte	Flag	Notes
SM5732	OF1, OF2	Bis(2-ethylhexyl)Phthalate	J- (all detects); UJ (all non-detects)	LCS %R is out of control low.

5. PAHs Data Review, GC/MS, Method 8270D Selected Ion Mode (SIM)

5.1 Stage 1 Review

Reviewed Item	Determination	Requirements/Comments
Sample Custody	SATISFACTORY	All samples received under proper chain of custody. • Sampled: 07 June 2019 between 09:35 and 09:51 • Relinquished at FedEx: 7 June 2019 at 11:54 • Arrived at Katahdin: 8 June 2019 at 09:50
Temperature	SATISFACTORY	Temperature 4 ± 2 °C Temperature at arrival: 0.2 °C Note: Temperature of cooler is below 2 °C, but samples were not frozen, which is acceptable.
Holding Time	SATISFACTORY	Extraction holding time for aqueous samples is 14 days, and analysis holding time for extracts is 40 days. • Sampled: 07 June 2019 • Extracted: 12 June 2019 (5 days) • Analyzed: 13 June 2019 (1 day)
Dilution	INFORMATION ONLY	No samples were diluted.

5.2 Stage 2a Review

Reviewed Item	Determination	Requirements/Comments
Method Blank (MB)	SATISFACTORY	• Perform one per preparatory batch. • No analytes detected > ½ LOQ or > 1/10th the amount measured in any sample or 1/10th the regulatory limit, whichever is greater. • Common contaminants must not be detected > LOQ.
Laboratory Control Sample (LCS)	SATISFACTORY	• Perform one per preparatory batch. • Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan. • Specified: Lab in-house limits
Matrix Spike (MS), Matrix Spike Duplicate (MSD), and Relative Percent Difference (RPD)	SATISFACTORY	• Perform one per preparatory batch. • Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan. • Specified: Lab in-house limits • RPD of all analytes ≤ 20% (between MS and MSD).
Surrogate Spike	SATISFACTORY	• Perform for all field and QC samples. • Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan.

Reviewed Item	Determination	Requirements/Comments
Compound Identification and Quantitation	SATISFACTORY	• Compounds are identified and quantified automatically by the instrument. • Manual integration of one or more chromatographic peaks may be required to correct integration performed by the instrument. • All cases where manual review and integration of the chromatograms was required were initialed and dated by the reviewer in the data package. • Was manual integration performed? (Y/N): Y
Field Duplicates (FD)	NA	• RPD of all analytes ≤ 30% (between sample and FD), or as specified by project limits. • Were FDs collected? (Y/N): N

5.3 Stage 2b Review

Reviewed Item	Determination	Requirements/Comments
Tune Check	SATISFACTORY	• Perform prior to ICAL and prior to each 12-hour period of sample analysis. • Mass Specific ion abundance criteria of BFB or DFTPP from method.
Performance Check (Method 8270 only)	SATISFACTORY	• Perform at the beginning of each 12-hour period, prior to analysis of samples. • Degradation ≤ 20% for DDT. • Benzidine and pentachlorophenol shall be present at their normal responses and shall not exceed a tailing factor of 2.
Initial Calibration (ICAL) for All Analytes Including Surrogates	SATISFACTORY	• Perform at instrument set-up and after ICV or CCV failure, prior to sample analysis. • Each analyte must meet one of the three options below: Option 1: RSD for each analyte ≤ 15%; Option 2: linear least squares regression for each analyte: r2 ≥ 0.99; Option 3: non-linear least squares regression (quadratic) for each analyte: r2 ≥ 0.99.
Retention Time window position establishment	SATISFACTORY	• Perform once per ICAL and at the beginning of the analytical sequence. • Position shall be set using the midpoint standard of the ICAL curve when ICAL is performed. • On days when ICAL is not performed, the initial CCV is used.
Evaluation of Relative Retention Times (RRT)	SATISFACTORY	• Perform with each sample. • RRT of each reported analyte within ± 0.06 RRT units.
Initial Calibration Verification (ICV)	SATISFACTORY	• Perform once after each ICAL, analysis of a second source standard prior to sample analysis. • All reported analytes within ± 20% of true value.

Reviewed Item	Determination	Requirements/Comments
Continuing Calibration Verification (CCV)	SATISFACTORY	• Perform daily before sample analysis; after every 12 hours of analysis time; and at the end of the analytical batch run. • All reported analytes and surrogates within ± 20% of the true value. • All reported analytes and surrogates within ± 50% for end of analytical batch CCV.
Internal Standards (IS)	SATISFACTORY	• Perform every field sample, standard and QC sample. • Retention time within ± 10 seconds from retention time of the midpoint standard in the ICAL; EICP area within – 50% to +100% of ICAL midpoint standard. • On days when ICAL is not performed, the daily initial CCV can be used.

5.4 Qualification Summary Table

No data was qualified based on validation.

6. Organochlorine Pesticides Data Review, GC/MS, Method 8081B

6.1 Stage 1 Review

Reviewed Item	Determination	Requirements/Comments
Sample Custody	SATISFACTORY	All samples received under proper chain of custody. • Sampled: 07 June 2019 between 09:35 and 09:51 • Relinquished at FedEx: 7 June 2019 at 11:54 • Arrived at Katahdin: 8 June 2019 at 09:50
Temperature	SATISFACTORY	Temperature 4 ± 2 °C Temperature at arrival: 4.7 °C
Holding Time	SATISFACTORY	Extraction holding time for solid samples is 14 days, and analysis holding time for extracts is 40 days. • Sampled: 7 June 2019 • Extracted: 12 June 2019 (5 days) • Analyzed: 17 June 2019 (5 days)
Dilution	INFORMATION ONLY	No samples were diluted.

6.2 Stage 2a Review

Reviewed Item	Determination	Requirements/Comments
Method Blank (MB)	SATISFACTORY	• Perform one per preparatory batch. • No analytes detected > ½ LOQ or > 1/10th the amount measured in any sample or 1/10th the regulatory limit, whichever is greater. • Common contaminants must not be detected > LOQ.
Laboratory Control Sample (LCS)	SATISFACTORY	• Perform one per preparatory batch. • Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan. • Specified: Lab in-house limits

Reviewed Item	Determination	Requirements/Comments
Matrix Spike (MS), Matrix Spike Duplicate (MSD), and Relative Percent Difference (RPD)	**See Qualification Summary Table**	• Perform one per preparatory batch. • Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan. • Specified: Lab in-house limits • RPD of all analytes ≤ 20% (between MS and MSD).
Surrogate Spike	**See Qualification Summary Table**	• Perform for all field and QC samples. • Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan.
Compound Identification and Quantitation	SATISFACTORY	• Compounds are identified and quantified automatically by the instrument. • Manual integration of one or more chromatographic peaks may be required to correct integration performed by the instrument. • All cases where manual review and integration of the chromatograms was required were initialed and dated by the reviewer in the data package. • Was manual integration performed? (Y/N): Y
Field Duplicates (FD)	NA	• RPD of all analytes ≤ 30% (between sample and FD), or as specified by project limits. • Were FDs collected? (Y/N): N
Confirmation by Dual Column Analysis	SATISFACTORY	• RPD is within method acceptance limits (40%)

6.3 Stage 2b Review

Reviewed Item	Determination	Requirements/Comments
Tune Check	SATISFACTORY	• Perform prior to ICAL and prior to each 12-hour period of sample analysis. • Mass Specific ion abundance criteria of BFB or DFTPP from method.
Initial Calibration (ICAL) for All Analytes Including Surrogates	SATISFACTORY	• Perform at instrument set-up and after ICV or CCV failure, prior to sample analysis. • Each analyte must meet one of the three options below: Option 1: RSD for each analyte ≤ 15%; Option 2: linear least squares regression for each analyte: r2 ≥ 0.99; Option 3: non-linear least squares regression (quadratic) for each analyte: r2 ≥ 0.99.
Retention Time window position establishment	SATISFACTORY	• Perform once per ICAL and at the beginning of the analytical sequence. • Position shall be set using the midpoint standard of the ICAL curve when ICAL is performed. • On days when ICAL is not performed, the initial CCV is used.
Evaluation of Relative Retention Times (RRT)	SATISFACTORY	• Perform with each sample. • RRT of each reported analyte within ± 0.06 RRT units.

Reviewed Item	Determination	Requirements/Comments
Initial Calibration Verification (ICV)	**See Qualification Summary Table**	• Perform once after each ICAL, analysis of a second source standard prior to sample analysis. • All reported analytes within ± 20% of true value.
Continuing Calibration Verification (CCV)	SATISFACTORY	• Perform daily before sample analysis; after every 12 hours of analysis time; and at the end of the analytical batch run. • All reported analytes and surrogates within ± 20% of the true value. • All reported analytes and surrogates within ± 50% for end of analytical batch CCV.
Internal Standards (IS)	SATISFACTORY	• Perform every field sample, standard and QC sample. • Retention time within ± 10 seconds from retention time of the midpoint standard in the ICAL; EICP area within – 50% to +100% of ICAL midpoint standard. • On days when ICAL is not performed, the daily initial CCV can be used.

6.4 Qualification Summary Table

Note: For analyte 2,4'-DDT, multiple factors were flagged. Overall, for all samples, J was selected for detects, and UJ was selected for non-detects.

SDG	Sample Affected	Analyte	Flag	Notes
SM5732	OF2	Gamma-BHC Aldrin Heptachlor Epoxide Endosulfan I Gamma-Chlordane Alpha-Chlordane 4,4'-DDE Dieldrin Endrin Endosulfan Sulfate	J- (all detects) UJ (all non-detects)	MS and/or MSD %R out of control low.
	OF1	Tetrachloro-M-Xylene Decachlorobiphenyl	J- (all detects) UJ (all non-detects)	Surrogate %R out of control low.
	OF2	Decachlorobiphenyl	J- (all detects) UJ (all non-detects)	Surrogate %R out of control low.
	OF1, OF2	All analytes except methoxychlor	J (all detects)	Initial calibration verification reported analytes > 20% from true value.

7. Polychlorinated Biphenyl (PCB) Congeners Data Review, GC/MS, Method 1668C

7.1 Stage 1 Review

Reviewed Item	Determination	Requirements/Comments
Sample Custody	SATISFACTORY	All samples received under proper chain of custody. • Sampled: 07 June 2019 between 09:35 and 09:51 • Relinquished at FedEx: 7 June 2019 at 11:54 • Arrived at Katahdin: 8 June 2019 at 09:50
Temperature	SATISFACTORY	Temperature 4 ± 2 °C Temperature at arrival: 0.2 °C Note: Temperature of cooler is below 2 °C, but samples were not frozen, which is acceptable.

Reviewed Item	Determination	Requirements/Comments
Holding Time	SATISFACTORY	Extraction holding time for solid samples is 14 days, and analysis holding time for extracts is 40 days. • Sampled: 7 June 2019 • Extracted: 14 June 2019 (7 days) • Analyzed: 19 June 2019 (5 days)
Dilution	INFORMATION ONLY	OF1 was diluted 2x. Both results are reported, and most are relatively close in concentration. Some LOQs were raised in the diluted sampled, but most detections are significantly above the LOQ.

7.2 Stage 2a Review

Reviewed Item	Determination	Requirements/Comments
Method Blank (MB)	**See Qualification Summary Table**	• Perform one per preparatory batch. • No analytes detected > ½ LOQ or > 1/10th the amount measured in any sample or 1/10th the regulatory limit, whichever is greater. • Common contaminants must not be detected > LOQ.
Laboratory Control Sample (LCS), Laboratory Control Sample Duplicate (LCSD) and Relative Percent Difference (RPD)	SATISFACTORY	• Perform one per preparatory batch. • Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan. • Specified: Lab in-house limits • RPD of all analytes ≤ 50% (between LCS and LCSD).
Matrix Spike (MS), Matrix Spike Duplicate (MSD), and Relative Percent Difference (RPD)	SATISFACTORY	• Perform one per preparatory batch. • Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan. • Specified: Lab in-house limits • RPD of all analytes ≤ 50% (between MS and MSD).
Surrogate Spike	SATISFACTORY	• Perform for all field and QC samples. • Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan.
Compound Identification and Quantitation	SATISFACTORY	• Compounds are identified and quantified automatically by the instrument. • Manual integration of one or more chromatographic peaks may be required to correct integration performed by the instrument. • All cases where manual review and integration of the chromatograms was required were initialed and dated by the reviewer in the data package. • Was manual integration performed? (Y/N): Y
Field Duplicates (FD)	NA	• RPD of all analytes ≤ 30% (between sample and FD), or as specified by project limits. • Were FDs collected? (Y/N): N

7.3 Stage 2b Review

Reviewed Item	Determination	Requirements/Comments
Tune Check	SATISFACTORY	• Perform prior to ICAL and prior to each 12-hour period of sample analysis. • Mass Specific ion abundance criteria of BFB or DFTPP from method.
Initial Calibration (ICAL) for All Analytes Including Surrogates	SATISFACTORY	• Perform at instrument set-up and after ICV or CCV failure, prior to sample analysis. • Each analyte must meet one of the three options below: Option 1: RSD for each analyte ≤ 15%; Option 2: linear least squares regression for each analyte: r2 ≥ 0.99; Option 3: non-linear least squares regression (quadratic) for each analyte: r2 ≥ 0.99.
Retention Time window position establishment	SATISFACTORY	• Perform once per ICAL and at the beginning of the analytical sequence. • Position shall be set using the midpoint standard of the ICAL curve when ICAL is performed. • On days when ICAL is not performed, the initial CCV is used.
Evaluation of Relative Retention Times (RRT)	SATISFACTORY	• Perform with each sample. • RRT of each reported analyte within ± 0.06 RRT units.
Initial Calibration Verification (ICV)	SATISFACTORY	• Perform once after each ICAL, analysis of a second source standard prior to sample analysis. • All reported analytes within ± 20% of true value.
Continuing Calibration Verification (CCV)	SATISFACTORY	• Perform daily before sample analysis; after every 12 hours of analysis time; and at the end of the analytical batch run. • All reported analytes and surrogates within ± 20% of the true value. • All reported analytes and surrogates within ± 50% for end of analytical batch CCV.
Internal Standards (IS)	SATISFACTORY	• Perform every field sample, standard and QC sample. • Retention time within ± 10 seconds from retention time of the midpoint standard in the ICAL; EICP area within – 50% to +100% of ICAL midpoint standard. • On days when ICAL is not performed, the daily initial CCV can be used.

7.4 Qualification Summary Table

SDG	Sample Affected	Analyte	Flag	Notes
580-86755	OF2	PCB-44 PCB-47 PCB-52 PCB-61 PCB-65	UJ (all detects)	Concentrations detected in the method blank are > 1/10 the concentration detected in the parent sample. Concentrations were flagged as non-detect at their detected concentration.

	OF1	PCB-70 PCB-74 PCB-76 PCB-129 PCB-138 PCB-147 PCB-149 PCB-153 PCB-163 PCB-168 PCB-209	No flag	Concentrations detected in the method blank are < 1/10 the concentration detected in the parent sample.

8. Organotins Data Review, GC/MS, PSEP/Krone Method

8.1 Stage 1 Review

Reviewed Item	Determination	Requirements/Comments
Sample Custody	SATISFACTORY	All samples received under proper chain of custody. • Sampled: 07 June 2019 between 09:35 and 09:51 • Relinquished at FedEx: 7 June 2019 at 11:54 • Arrived at Katahdin: 8 June 2019 at 09:50
Temperature	SATISFACTORY	Temperature 4 ± 2 °C Temperature at arrival: 0.2 °C Note: Temperature of cooler is below 2 °C, but samples were not frozen, which is acceptable.
Holding Time	**See Qualification Summary Table**	Extraction holding time for solid samples is 14 days, and analysis holding time for extracts is 40 days. • Sampled: 7 June 2019 • Prepared: 13 June 2019 (6 days) & 27 June 2019 (20 days) • Analyzed: 24 June 2019 (7 days) & 10 July 2019 (14 days)
Dilution	INFORMATION ONLY	No samples were diluted.

8.2 Stage 2a Review

Reviewed Item	Determination	Requirements/Comments
Method Blank (MB)	SATISFACTORY	• Perform one per preparatory batch. • No analytes detected > ½ LOQ or > 1/10th the amount measured in any sample or 1/10th the regulatory limit, whichever is greater. • Common contaminants must not be detected > LOQ.
Laboratory Control Sample (LCS), Laboratory Control Sample Duplicate (LCSD) and Relative Percent Difference (RPD)	**See Qualification Summary Table**	• Perform one per preparatory batch. • Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan. • Specified: Lab in-house limits for recovery and RPD.
Matrix Spike (MS), Matrix Spike Duplicate (MSD), and Relative Percent Difference (RPD)	**See Qualification Summary Table**	• Perform one per preparatory batch. • Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan. • Specified: Lab in-house limits for recovery and RPD.

Reviewed Item	Determination	Requirements/Comments
Surrogate Spike	SATISFACTORY	• Perform for all field and QC samples. • Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan.
Compound Identification and Quantitation	SATISFACTORY	• Compounds are identified and quantified automatically by the instrument. • Manual integration of one or more chromatographic peaks may be required to correct integration performed by the instrument. • All cases where manual review and integration of the chromatograms was required were initialed and dated by the reviewer in the data package. • Was manual integration performed? (Y/N): Y
Field Duplicates (FD)	NA	• RPD of all analytes ≤ 30% (between sample and FD), or as specified by project limits. • Were FDs collected? (Y/N): N

8.3 Stage 2b Review

Reviewed Item	Determination	Requirements/Comments
Tune Check	SATISFACTORY	• Perform prior to ICAL and prior to each 12-hour period of sample analysis. • Mass Specific ion abundance criteria of BFB or DFTPP from method.
Initial Calibration (ICAL) for All Analytes Including Surrogates	SATISFACTORY	• Perform at instrument set-up and after ICV or CCV failure, prior to sample analysis. • Each analyte must meet one of the three options below: Option 1: RSD for each analyte ≤ 15%; Option 2: linear least squares regression for each analyte: r2 ≥ 0.99; Option 3: non-linear least squares regression (quadratic) for each analyte: r2 ≥ 0.99.
Retention Time window position establishment	SATISFACTORY	• Perform once per ICAL and at the beginning of the analytical sequence. • Position shall be set using the midpoint standard of the ICAL curve when ICAL is performed. • On days when ICAL is not performed, the initial CCV is used.
Evaluation of Relative Retention Times (RRT)	SATISFACTORY	• Perform with each sample. • RRT of each reported analyte within ± 0.06 RRT units.
Initial Calibration Verification (ICV)	SATISFACTORY	• Perform once after each ICAL, analysis of a second source standard prior to sample analysis. • All reported analytes within ± 20% of true value. • In-house laboratory limit of ± 25% of true value was used.

Reviewed Item	Determination	Requirements/Comments
Continuing Calibration Verification (CCV)	**See Qualification Summary Table**	• Perform daily before sample analysis; after every 12 hours of analysis time; and at the end of the analytical batch run. • All reported analytes and surrogates within ± 20% of the true value. • All reported analytes and surrogates within ± 50% for end of analytical batch CCV.
Internal Standards (IS)	SATISFACTORY	• Perform every field sample, standard and QC sample. • Retention time within ± 10 seconds from retention time of the midpoint standard in the ICAL; EICP area within – 50% to +100% of ICAL midpoint standard. • On days when ICAL is not performed, the daily initial CCV can be used.

8.4 Qualification Summary Table

SDG	Sample Affected	Analyte	Flag	Notes
580-86755	OF1,OF2 (all reanalyzed analytes, prep batch 304241)	All analytes.	J- (all detects), UJ (all non-detects)	All analytes in this method were extracted a second time outside of the hold time, and then reanalyzed.
	OF1, OF2 (first run, prep batch 303081)	Monobutyltin	J- (all detects), UJ (all non-detects)	LCS %R out of control low.
	OF2 (first run)			MS & MSD %R out of control low.
580-86755	OF1,OF2 (all reanalyzed analytes)	Tetra-n-butyltin Dibutyltin	J (all detects), UJ (all non-detects)	Continuing calibration for these analytes was out of control for %D of reported concentration from the true value.

9. Gas-Range Petroleum Products Data Review, GC, Method NWTPH-Gx

9.1 Stage 1 Review

Reviewed Item	Determination	Requirements/Comments
Sample Custody	SATISFACTORY	All samples received under proper chain of custody. • Sampled: 07 June 2019 between 09:35 and 09:51 • Relinquished at FedEx: 7 June 2019 at 11:54 • Arrived at Katahdin: 8 June 2019 at 09:50
Temperature	SATISFACTORY	Temperature 4 ± 2 °C Temperature at arrival: 0.2 °C Note: Temperature of cooler is below 2 °C, but samples were not frozen, which is acceptable.
Holding Time	SATISFACTORY	Holding time for aqueous samples is 14 days. • Sampled: 7 June 2019 • Analyzed: 11 June 2019 (4 days)
Dilution	INFORMATION ONLY	No samples were diluted.

9.2 Stage 2a Review

Reviewed Item	Determination	Requirements/Comments
Method Blank (MB)	SATISFACTORY	• Perform one per preparatory batch. • No analytes detected > ½ LOQ or > 1/10th the amount measured in any sample or 1/10th the regulatory limit, whichever is greater. • Common contaminants must not be detected > LOQ.
Laboratory Control Sample (LCS)	SATISFACTORY	• Perform one per preparatory batch. • Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan. • Specified: Lab in-house limits
Matrix Spike (MS), Matrix Spike Duplicate (MSD), and Relative Percent Difference (RPD)	SATISFACTORY	• Perform one per preparatory batch. • Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan. • Specified: Lab in-house limits • RPD of all analytes ≤ 30% (between MS and MSD).
Surrogate Spike	SATISFACTORY	• Perform for all field and QC samples. • Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan.
Compound Identification and Quantitation	SATISFACTORY	• Compounds are identified and quantified automatically by the instrument. • Manual integration of one or more chromatographic peaks may be required to correct integration performed by the instrument. • All cases where manual review and integration of the chromatograms was required were initialed and dated by the reviewer in the data package. • Was manual integration performed? (Y/N): N
Field Duplicates (FD)	NA	• RPD of all analytes ≤ 30% (between sample and FD), or as specified by project limits. • Were FDs collected? (Y/N): N

9.3 Stage 2b Review

Reviewed Item	Determination	Requirements/Comments
Initial Calibration (ICAL) for All Analytes Including Surrogates	SATISFACTORY	• Perform at instrument set-up and after ICV or CCV failure, prior to sample analysis. • Each analyte must meet one of the three options below: Option 1: RSD for each analyte ≤ 20%; Option 2: linear least squares regression for each analyte: r2 ≥ 0.99; Option 3: non-linear least squares regression (quadratic) for each analyte: r2 ≥ 0.99.
Retention Time window position establishment	SATISFACTORY	• Perform once per ICAL and at the beginning of the analytical sequence. • Position shall be set using the midpoint standard of the ICAL curve when ICAL is performed. • On days when ICAL is not performed, the initial CCV is used.

Reviewed Item	Determination	Requirements/Comments
Retention Time (RT) Window Width	SATISFACTORY	• Perform at method set-up and after major maintenance (e.g., column change). • RT width is ± 3 times standard deviation for each analyte RT from the 72-hour study or 0.03 minutes, whichever is greater.
Initial Calibration Verification (ICV)	SATISFACTORY	• Perform once after each ICAL, analysis of a second source standard prior to sample analysis. • All reported analytes within established RT windows. • All reported analytes within ± 20% of true value.
Continuing Calibration Verification (CCV)	SATISFACTORY	• Perform daily before sample analysis, after every 10 field samples, and at the end of the analysis sequence with the exception of CCVs for Pesticide multi-component analytes (i.e., Toxaphene, Chlordane and Aroclors other than 1016 and 1260), which are only required before sample analysis. • All reported analytes and surrogates within established RT windows. • All reported analytes and surrogates within ± 20% of true value.

9.4 Qualification Summary Table

No data was qualified based on validation.

10. Diesel-Range Petroleum Products Data Review, GC, Method NWTPH-Gx

10.1 Stage 1 Review

Reviewed Item	Determination	Requirements/Comments
Sample Custody	SATISFACTORY	All samples received under proper chain of custody. • Sampled: 07 June 2019 between 09:35 and 09:51 • Relinquished at FedEx: 7 June 2019 at 11:54 • Arrived at Katahdin: 8 June 2019 at 09:50
Temperature	SATISFACTORY	Temperature 4 ± 2 °C Temperature at arrival: 0.2 °C Note: Temperature of cooler is below 2 °C, but samples were not frozen, which is acceptable.
Holding Time	SATISFACTORY	Holding time for aqueous samples is 14 days. • Sampled: 7 June 2019 • Extracted: 19 June 19 (12 days) • Analyzed: 20 June 2019 (2 days)
Dilution	INFORMATION ONLY	No samples were diluted.

10.2 Stage 2a Review

Reviewed Item	Determination	Requirements/Comments
Method Blank (MB)	SATISFACTORY	• Perform one per preparatory batch. • No analytes detected > ½ LOQ or > 1/10th the amount measured in any sample or 1/10th the regulatory limit, whichever is greater. • Common contaminants must not be detected > LOQ.

Reviewed Item	Determination	Requirements/Comments
Laboratory Control Sample (LCS)	SATISFACTORY	• Perform one per preparatory batch. • Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan. • Specified: Lab in-house limits
Matrix Spike (MS), Matrix Spike Duplicate (MSD), and Relative Percent Difference (RPD)	SATISFACTORY	• Perform one per preparatory batch. • Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan. • Specified: Lab in-house limits • RPD of all analytes ≤ 30% (between MS and MSD).
Surrogate Spike	SATISFACTORY	• Perform for all field and QC samples. • Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan.
Compound Identification and Quantitation	SATISFACTORY	• Compounds are identified and quantified automatically by the instrument. • Manual integration of one or more chromatographic peaks may be required to correct integration performed by the instrument. • All cases where manual review and integration of the chromatograms was required were initialed and dated by the reviewer in the data package. • Was manual integration performed? (Y/N): N
Field Duplicates (FD)	NA	• RPD of all analytes ≤ 30% (between sample and FD), or as specified by project limits. • Were FDs collected? (Y/N): N

10.3 Stage 2b Review

Reviewed Item	Determination	Requirements/Comments
Initial Calibration (ICAL) for All Analytes Including Surrogates	SATISFACTORY	• Perform at instrument set-up and after ICV or CCV failure, prior to sample analysis. • Each analyte must meet one of the three options below: Option 1: RSD for each analyte ≤ 20%; Option 2: linear least squares regression for each analyte: r2 ≥ 0.99; Option 3: non-linear least squares regression (quadratic) for each analyte: r2 ≥ 0.99.
Retention Time window position establishment	SATISFACTORY	• Perform once per ICAL and at the beginning of the analytical sequence. • Position shall be set using the midpoint standard of the ICAL curve when ICAL is performed. • On days when ICAL is not performed, the initial CCV is used.
Retention Time (RT) Window Width	SATISFACTORY	• Perform at method set-up and after major maintenance (e.g., column change). • RT width is ± 3 times standard deviation for each analyte RT from the 72-hour study or 0.03 minutes, whichever is greater.

Reviewed Item	Determination	Requirements/Comments
Initial Calibration Verification (ICV)	SATISFACTORY	• Perform once after each ICAL, analysis of a second source standard prior to sample analysis. • All reported analytes within established RT windows. • All reported analytes within ± 20% of true value.
Continuing Calibration Verification (CCV)	SATISFACTORY	• Perform daily before sample analysis, after every 10 field samples, and at the end of the analysis sequence with the exception of CCVs for Pesticide multi-component analytes (i.e., Toxaphene, Chlordane and Aroclors other than 1016 and 1260), which are only required before sample analysis. • All reported analytes and surrogates within established RT windows. • All reported analytes and surrogates within ± 20% of true value.

10.4 Qualification Summary Table

No data was qualified based on validation.

11. Dissolved Organic Carbon, Method EPA 415.1

11.1 Stage 1 Review

Reviewed Item	Determination	Requirements/Comments
Sample Custody	SATISFACTORY	All samples received under proper chain of custody. • Sampled: 07 June 2019 between 09:35 and 09:51 • Relinquished at FedEx: 7 June 2019 at 11:54 • Arrived at Katahdin: 8 June 2019 at 09:50
Temperature	SATISFACTORY	Temperature 4 ± 2 °C Temperature at arrival: 4.7 °C
Holding Time	SATISFACTORY	Holding time for aqueous samples is 28 days. • Sampled: 07 June 2019 • Analyzed: 20 June 2019 (13 days)
Dilution	INFORMATION ONLY	No samples were diluted.

11.2 Stage 2a Review

Reviewed Item	Determination	Requirements/Comments
Method Blank (MB)	SATISFACTORY	• Perform one per preparatory batch. • No analytes detected > ½ LOQ or > 1/10th the amount measured in any sample or 1/10th the regulatory limit, whichever is greater.
Laboratory Control Sample (LCS)	SATISFACTORY	• Perform one per preparatory batch. • Recoveries must be within project limits, or lab in-house limits as specified in the project plan. • Specified: Lab in-house limits
Field Duplicates (FD)	NA	• RPD of all analytes ≤ 30% (between sample and FD), or as specified by project limits. • Were FDs collected? (Y/N): N

11.3 Stage 2b Review

Reviewed Item	Determination	Requirements/Comments
Initial Calibration (ICAL) for All Analytes Including Surrogates	SATISFACTORY	• Perform prior to sample analysis. • Blank plus 5 points. • r2 ≥ 0.995.
Initial Calibration Verification (ICV)	SATISFACTORY	• Perform daily, prior to sample analysis, immediately following ICAL. • Within ± 10% of expected concentration.
Carbonate-bicarbonate (CO_3-HCO_3) Standard	SATISFACTORY	• For instruments which subtract the inorganic concentration from the total to calculate the TOC, ± 10% from expected concentration. • For instruments which acidify and sparge the inorganic carbon, a recovery of less than the contract-required detection limit (CRDL) is required.
Continuing Calibration Verification (CCV)	SATISFACTORY	• Perform before sample analysis, after every 10 samples and end of run. • Within ± 10% of expected concentration.
Calibration Blank Verification (ICB, CCB)	SATISFACTORY	• Perform after ICV and CCVs • < CRDL
Contract-Required Detection Limit (CRDL) Verification Standard (< 2X CRDL) or LCS	SATISFACTORY	• After initial CCV • Within ± 20% of expected concentration.

11.4 Qualification Summary Table

No data was qualified based on validation.

12. Total Suspended Solids, Method SM 2540D

12.1 Stage 1 Review

Reviewed Item	Determination	Requirements/Comments
Sample Custody	SATISFACTORY	All samples received under proper chain of custody. • Sampled: 07 June 2019 between 09:35 and 09:51 • Relinquished at FedEx: 7 June 2019 at 11:54 • Arrived at Katahdin: 8 June 2019 at 09:50
Temperature	SATISFACTORY	Temperature 4 ± 2 °C Temperature at arrival: 4.7 °C
Holding Time	SATISFACTORY	Holding time for preparation is 7 days. • Sampled: 07 June 2019 • Prepared: 11 June 2019 (4 days) • Analyzed: 13 June 2019 (2 days)

12.2 Stage 2a Review

Reviewed Item	Determination	Requirements/Comments
Method Blank (MB)	SATISFACTORY	• Perform one per preparatory batch. • No analytes detected > ½ LOQ or > 1/10th the amount measured in any sample or 1/10th the regulatory limit, whichever is greater.

Reviewed Item	Determination	Requirements/Comments
Laboratory Control Sample (LCS)	SATISFACTORY	• Perform one per preparatory batch. • Recoveries must be within project limits, or lab in-house limits as specified in the project plan. • Specified: Lab in-house limits
Field Duplicates (FD)	NA	• RPD of all analytes ≤ 30% (between sample and FD), or as specified by project limits. • Were FDs collected? (Y/N): N

12.3 Stage 2b Review
Not applicable.

12.4 Qualification Summary Table
No data was qualified based on validation.

13. Summary of Data Quality Indicators

This section provides an overall quantitative and qualitative assessment of the data and identifies potential sources of error, uncertainty, and bias that may affect the overall usability. The data quality indicators defined in the QAPP and presented in this section include precision, accuracy, representativeness, completeness, and sensitivity.

Precision
Precision is defined as the degree of agreement between or among independent, similar, or repeated measures. Duplicate pairs such as MS/MSD, LCS/LCSD, laboratory duplicate, and field duplicate samples are evaluated as RPD. The relative percent difference (RPD) for these analyses is calculated as follows:

$$RPD = \frac{|S_1 - S_2|}{S_{avg}} \times 100\%$$

Where S_1 and S_2 = the observed concentration of analyte in the sample and its duplicate, and

S_{avg} = the average of observed analyte concentration in the samples and its duplicate.

All precision data is within control for this data.

Accuracy
Accuracy is the amount of agreement between a measured value and the true value. Accuracy, expressed as %Recovery (%R), was assessed for each method, analyte, and matrix, by comparing MS/MSD, LCS/LCSD, and surrogate recoveries to the method limits. Measurements for which accuracy is out of control limits are discussed in section 3.4, 5.4, and 7.4. The accuracy of the data set is considered acceptable after qualification (flagging) of estimated results.

Representativeness
Representativeness is a qualitative parameter that expresses the degree to which the sample data are characteristic of a population and is evaluated by reviewing the QC results of blank samples and holding times. Positive detects of compounds in the method blank samples identify compounds that may have been introduced into the samples during preparation, or analysis.

All samples for each method and matrix were evaluated for holding time compliance. All holding times and temperature requirements were met with the following exception: for one of the two analysis runs of organotins, the holding time criteria was exceeded. Overall, the J flag was assigned to detected concentrations, and UJ was selected for non-detects (section 7.4). The organotins analysis was rerun due to a QC issue in the first run (first run: preparatory batch 303081, reanalysis: preparatory batch 304241). In the first run, the LCS for monobutyltin failed low (recovery was 1%, acceptance limits are 10-150%), and the MS and MSD also failed low, at 9% and 8% respectively. The samples were re-run, though the hold time had expired at that point. The QC issues did not reoccur in the reanalysis, and monobutyltin was nondetect in both runs.

Method blanks were performed at the required frequency and contaminants were not detected in analyses, with the following exception: one analysis as discussed in Section 6.4, for PCB congeners. Various analytes are detected in the method blank at low concentrations, with some being > 1/10 the concentration detected in the parent sample. These results that were detected in the method blank were flagged as UJ in the parent sample.

Additionally, a filter blank was performed for the dissolved metals analysis and zinc was detected in the filter blank above the LOQ and similar in concentration to the total metals and the filtered dissolved metals sample. The dissolved metals sample result for zinc was flagged as UJ and reported at the numerical value of the LOQ (section 2.4).

The representativeness of the project data is considered acceptable after qualification (flagging) of estimated results.

Completeness

Analytical completeness was calculated as defined in the QAPP and expressed as the percentage of measurements that were judged to be valid, i.e., not rejected, and acceptable for all intended date use. No data were rejected; analytical completeness for this sampling event was 100%.

Sensitivity

Sensitivity is the ability of an analytical method or instrument to discriminate between measurement responses representing different concentrations. The sensitivity of the analytical methods (i.e., method reporting limits) identified for this project comply with the QAPP (USACE 2019a). In some cases, dilutions were required which affected reporting limits.

14. Conclusions

The overall assessment of data indicates that the data set met project requirements. Sample results that were found to be estimated (J) should be used with caution if results are close to projection decision limits or regulatory benchmarks. Based upon the data review performed, all results are considered valid and usable for all purposes.

15. References

Department of Defense (DoD), 2018a. *General Data Validation Guidelines*, Version 5.1, February 9.

DoD, 2018b. Data Validation Guidelines Module 1: Data Validation Procedure for Organic Analysis by GC/MS (SW-846 8260, 8270). August 3.

DoD, 2019. *DoD Quality Systems Manual for Environmental Laboratories*, Version 5.3, May 8.

United States Army Corps of Engineers (USACE), 2019a. *Work Plan with Quality Assurance Project Plan (WP-QAPP) Amendment 1 for Catch Basin Solids and Stormwater Sampling at Sandblast AOPC, Bradford Island, Cascade Locks, Oregon, March 4.*

USACE, 2019b. *Stormwater Sampling Field Report, Sandblast AOPC, Bradford Island, Cascade Locks, Oregon.* July 11.

United Stated Environmental Protection Agency (USEPA), 2009. *Guidance for Labeling Externally Validated Data for Superfund Use*, EPA 540-R-08-00. January 13.

USEPA, 2016. *National Functional Guidelines for High Resolution Superfund Methods Data Review*, EPA 542-B-16-001. April.

USEPA, 2017a. *National Functional Guidelines for Inorganic Superfund Methods Data Review*, EPA 540-R-2017-001. January.

USEPA, 2017b. *National Functional Guidelines for Organic Superfund Methods Data Review*, EPA 540-R-2017-002. January.

USPEA, 2016. *Quick Guide To Drinking Water Sample Collection*. September.

Table 1. Sample Locations, Sample ID Numbers, and Sample Dates.

Analyses	OF-1	OF-2	Sample Date
Total and Dissolved Metals, EPA 200.8	N	N; MS/MSD	7 June 2019
Total and Dissolved Mercury, EPA 7470A	N	N; MS/MSD	7 June 2019
PAHs, EPA 8270D SIM	N	N; MS/MSD	7 June 2019
PCB Congeners, EPA 1668C	N	N; MS/MSD	7 June 2019
Organochlorine Pesticides, EPA 8081B	N	N; MS/MSD	7 June 2019
Total Organotins, PSEP	N	N; MS/MSD	7 June 2019
Gasoline-Range Petroleum Products, NWTPH-Gx	N	N; MS/MSD	7 June 2019
Diesel-Range Petroleum Products, NWTPH-Dx	N	N; MS/MSD	7 June 2019
SVOCs, EPA 8270D	N	N; MS/MSD	7 June 2019
Hardness as $CaCO_3$, EPA 200.8	N	N	7 June 2019
Dissolved Organic Carbon, EPA 415.1	N	N	7 June 2019
Total Suspended Solids, SM 2540D	N	N	7 June 2019
Temperature, Field Measurement	F	F	7 June 2019
pH, Field Measurement	F	F	7 June 2019

N = normal sample; MS/MSD = extra sample volume sufficient for MS/MSD was obtained; F = field measurement.

Table 2. Limit and Data Qualifier Flag Definitions.

Limit	Definition
LOQ	Limit of Quantitation: The smallest concentration that produces a quantitative result with known and recorded precision and bias. For DoD/DOE projects, the LOQ shall be set at or above the concentration of the lowest initial calibration standard and within the calibration range.
LOD	Limit of Detection: The smallest concentration of a substance that must be present in a sample in order to be detected at the DL with 99% confidence. At the LOD, the false negative rate (Type II error) is 1%. A LOD may be used as the lowest concentration for reliably reporting a non-detect of a specific analyte in a specific matrix with a specific method at 99% confidence. A LOD is typically 2x to 4x the DL.
DL	Detection Limit: The smallest analyte concentration that can be demonstrated to be different from zero or a blank concentration with 99% confidence. At the DL, the false positive rate (Type I error) is 1%. A DL may be used as the lowest concentration for reliably reporting a detection of a specific analyte in a specific matrix with a specific method with 99% confidence.
Flag	**Definition**
J	The analyte was detected above the DL. The reported result is an estimated value with an unknown bias. The result receives a J-flag if it is below the LOQ, or due to other quality reasons.
J+	The analyte was detected above the DL. The result is an estimated quantity, but the result may be biased high. The result receives a J-flag if it is below the LOQ, or due to other quality reasons.
J-	The analyte was detected above the DL. The result is an estimated quantity, but the result may be biased low. The result receives a J-flag if it is below the LOQ, or due to other quality reasons.
U	The analyte was not detected and was reported as less than the LOD or as defined by the customer. The LOD has been adjusted for any dilution or concentration of the sample.
UJ	The analyte was not detected and was reported as less than the LOD or as defined by the customer. However, the associated numerical value is approximate.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

Attachment 1:

Table 3. Validated Data (Detects are Bold).

	OF-1 (CB-1)							OF-2						
Bold Number = Detected (Not bold = non-detect)														
Method: 200.8 - Total Metals (ICP/MS)														
Analyte	Result	Qualifier	LOQ	LOD	MDL	Unit	Dil Fac	Result	Qualifier	LOQ	LOD	MDL	Unit	Dil Fac
Antimony	**0.115**	**J**	**0.20**	**0.10**	**0.011**	**µg/L**	**1**	**0.078**	**J**	**0.20**	**0.10**	**0.011**	**µg/L**	**1**
Arsenic	0.80	U	1.0	0.80	0.45	µg/L	1	0.8	U	1.0	0.80	0.45	µg/L	1
Cadmium	**0.22**		**0.20**	**0.040**	**0.0059**	**µg/L**	**1**	**0.02**	**J**	**0.20**	**0.040**	**0.0059**	**µg/L**	**1**
Chromium	**4.49**		**1.0**	**0.80**	**0.045**	**µg/L**	**1**	**0.34**	**J**	**1.0**	**0.80**	**0.045**	**µg/L**	**1**
Copper	**14.4**		**0.60**	**0.40**	**0.037**	**µg/L**	**1**	**23.3**	**J**	**0.60**	**0.40**	**0.037**	**µg/L**	**1**
Lead	**50.4**		**0.20**	**0.10**	**0.015**	**µg/L**	**1**	**0.49**		**0.20**	**0.10**	**0.015**	**µg/L**	**1**
Nickel	**5.01**		**0.40**	**0.24**	**0.030**	**µg/L**	**1**	**0.477**		**0.40**	**0.24**	**0.030**	**µg/L**	**1**
Selenium	**0.041**	**J**	**1.0**	**0.60**	**0.037**	**µg/L**	**1**	**0.043**	**J**	**1.0**	**0.60**	**0.037**	**µg/L**	**1**
Silver	0.08	U	0.20	0.080	0.010	µg/L	1	0.08	U	0.20	0.080	0.010	µg/L	1
Zinc	**48.9**		**2.0**	**1.60**	**0.78**	**µg/L**	**1**	**33.8**		**2.0**	**1.60**	**0.78**	**µg/L**	**1**
Method: 200.8 - Dissolved Metals (ICP/MS)														
Analyte	Result	Qualifier	LOQ	LOD	MDL	Unit	Dil Fac	Result	Qualifier	LOQ	LOD	MDL	Unit	Dil Fac
Antimony	**0.10**	**J**	**0.20**	**0.10**	**0.011**	**µg/L**	**1**	**0.147**	**J**	**0.20**	**0.10**	**0.011**	**µg/L**	**1**
Arsenic	0.80	U	1.0	0.80	0.45	µg/L	1	0.80	U	1.0	0.80	0.45	µg/L	1
Cadmium	**0.041**	**J**	**0.20**	**0.040**	**0.0059**	**µg/L**	**1**	**0.0780**	**J**	**0.20**	**0.040**	**0.0059**	**µg/L**	**1**
Chromium	**0.959**	**J**	**1.0**	**0.80**	**0.045**	**µg/L**	**1**	**0.31**	**J**	**1.0**	**0.80**	**0.045**	**µg/L**	**1**
Copper	**5.21**		**0.60**	**0.40**	**0.037**	**µg/L**	**1**	**19.0**		**0.60**	**0.40**	**0.037**	**µg/L**	**1**
Lead	**1.11**		**0.20**	**0.10**	**0.015**	**µg/L**	**1**	**0.300**		**0.20**	**0.10**	**0.015**	**µg/L**	**1**
Nickel	**2.15**		**0.40**	**0.24**	**0.030**	**µg/L**	**1**	**0.429**		**0.40**	**0.24**	**0.030**	**µg/L**	**1**
Selenium	0.60	U	1.0	0.60	0.037	µg/L	1	**0.071**	**J**	**1.0**	**0.60**	**0.037**	**µg/L**	**1**
Silver	0.080	U	0.20	0.080	0.010	µg/L	1	**0.010**	**J**	**0.20**	**0.080**	**0.010**	**µg/L**	**1**
Zinc	**31.5**	**UJ**	**2.0**	**1.60**	**0.78**	**µg/L**	**1**	**30.3**	**UJ**	**2.0**	**1.60**	**0.78**	**µg/L**	**1**
Method: 7470 - Total Mercury (CVAA)														
Analyte	Result	Qualifier	LOQ	LOD	MDL	Unit	Dil Fac	Result	Qualifier	LOQ	LOD	MDL	Unit	Dil Fac
Mercury	0.10	U	0.20	0.10	0.013	µg/L	1	0.10	U	0.20	0.10	0.013	µg/L	1
Method: 7470 - Dissolved Mercury (CVAA)														
Analyte	Result	Qualifier	LOQ	LOD	MDL	Unit	Dil Fac	Result	Qualifier	LOQ	LOD	MDL	Unit	Dil Fac
Mercury	0.10	U	0.20	0.10	0.013	µg/L	1	0.10	U	0.20	0.10	0.013	µg/L	1
Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)														
Analyte	Result	Qualifier	LOQ	LOD	MDL	Unit	Dil Fac	Result	Qualifier	LOQ	LOD	MDL	Unit	Dil Fac
Di-n-butylbenzylphthalate	0.98	U	2.0	0.98	0.81	µg/L	1	1.1	U	2.2	1.1	0.89	µg/L	1
Bis(2-ethylhexyl)phthalate	**0.73**	**J-**	**0.98**	**0.49**	**0.49**	**µg/L**	**1**	0.54	UJ	1.1	0.54	0.54	µg/L	1
Carbazole	0.49	U	0.98	0.49	0.19	µg/L	1	0.54	U	1.1	0.54	0.20	µg/L	1
Phenol	0.49	U	0.98	0.49	0.12	µg/L	1	0.54	U	1.1	0.54	0.13	µg/L	1
Butylbenzylphthalate	0.49	U	0.98	0.49	0.13	µg/L	1	0.54	U	1.1	0.54	0.14	µg/L	1
Method: 8270D SIM - Polycyclic Aromatic Hydrocarbons (PAHs) by GC/MS SIM														
Analyte	Result	Qualifier	LOQ	LOD	MDL	Unit	Dil Fac	Result	Qualifier	LOQ	LOD	MDL	Unit	Dil Fac
Naphthalene	0.081	U	0.10		0.032	ug/L	1	0.082	U	0.10		0.032	ug/L	1
2-Methylnaphthalene	0.081	U	0.20		0.04	ug/L	1	0.082	U	0.20		0.04	ug/L	1
Acenaphthylene	**0.016**	**J**	**0.051**		**0.0092**	**ug/L**	**1**	0.033	U	0.051		0.0092	ug/L	1
Acenaphthene	0.033	U	0.10		0.014	ug/L	1	0.033	U	0.10		0.014	ug/L	1
Fluorene	0.033	U	0.10		0.017	ug/L	1	0.033	U	0.10		0.017	ug/L	1
Phenanthrene	**0.060**	**J**	**0.10**		**0.032**	**ug/L**	**1**	0.082	U	0.10		0.032	ug/L	1
Anthracene	0.081	U	0.10		0.022	ug/L	1	0.082	U	0.10		0.022	ug/L	1
Fluoranthene	**0.19**	**J**	**0.20**		**0.051**	**ug/L**	**1**	0.18	U	0.20		0.051	ug/L	1
Pyrene	**0.18**		**0.10**		**0.034**	**ug/L**	**1**	0.082	U	0.10		0.034	ug/L	1
Benzo[a]anthracene	**0.093**		**0.051**		**0.014**	**ug/L**	**1**	0.033	U	0.051		0.014	ug/L	1
Chrysene	**0.15**		**0.10**		**0.016**	**ug/L**	**1**	0.033	U	0.10		0.016	ug/L	1
Benzo[b]fluoranthene	**0.23**		**0.051**		**0.011**	**ug/L**	**1**	0.033	U	0.051		0.011	ug/L	1
Benzo[k]fluoranthene	**0.061**		**0.051**		**0.012**	**ug/L**	**1**	0.033	U	0.051		0.012	ug/L	1
Benzo[a]pyrene	**0.14**		**0.10**		**0.011**	**ug/L**	**1**	0.033	U	0.10		0.011	ug/L	1
Indeno[1,2,3-cd]pyrene	**0.15**		**0.051**		**0.014**	**ug/L**	**1**	0.033	U	0.051		0.014	ug/L	1

Filter Blank						
Result	Qualifier	LOQ	LOD	MDL	Unit	Dil Fac
0.022	**J**	**0.20**	**0.10**	**0.011**	**µg/L**	**1**
0.80	U	1.0	0.80	0.45	µg/L	1
0.018	**J**	**0.20**	**0.040**	**0.0059**	**µg/L**	**1**
0.12	**J**	**1.0**	**0.80**	**0.045**	**µg/L**	**1**
0.40	U	0.60	0.40	0.037	µg/L	1
0.054	**J**	**0.20**	**0.10**	**0.015**	**µg/L**	**1**
0.074	**J**	**0.40**	**0.24**	**0.030**	**µg/L**	**1**
0.60	U	1.0	0.60	0.037	µg/L	1
0.08	U	0.20	0.080	0.010	µg/L	1
40.0		**2.0**	**1.60**	**0.78**	**µg/L**	**1**
Result	Qualifier	LOQ	LOD	MDL	Unit	Dil Fac
0.10	U	0.20	0.10	0.013	µg/L	1

Dibenz(a,h)anthracene	**0.048**	**J**	**0.10**		**0.026**	**ug/L**	**1**	0.033	U	0.10		0.027	ug/L	1
Benzo[g,h,i]perylene	**0.13**		**0.051**		**0.012**	**ug/L**	**1**	0.033	U	0.051		0.012	ug/L	1
Method: 8081B - Organochlorine Pesticides (GC)														
Analyte	Result	Qualifier	LOQ	LOD	MDL	Unit	Dil Fac	Result	Qualifier	LOQ	LOD	MDL	Unit	Dil Fac
Gamma-BHC	0.0051	UJ	0.010	0.0051	0.0015	ug/L	1	0.0058	UJ	0.012	0.0058	0.0017	ug/L	1
Heptachlor	0.0051	UJ	0.010	0.0051	0.0016	ug/L	1	0.0058	UJ	0.012	0.0058	0.0019	ug/L	1
Aldrin	0.0051	UJ	0.010	0.0051	0.0015	ug/L	1	0.0058	UJ	0.012	0.0058	0.0017	ug/L	1
Heptachlor Epoxide	0.0051	UJ	0.010	0.0051	0.0015	ug/L	1	0.0058	UJ	0.012	0.0058	0.0017	ug/L	1
Endosulfan I	0.0051	UJ	0.010	0.0051	0.0013	ug/L	1	UJ	UJ	0.012	0.0058	0.0015	ug/L	1
Gamma-Chlordane	0.0051	UJ	0.010	0.0051	0.0012	ug/L	1	UJ	UJ	0.012	0.0058	0.0014	ug/L	1
Alpha-Chlordane	0.0051	UJ	0.010	0.0051	0.0016	ug/L	1	UJ	UJ	0.012	0.0058	0.0018	ug/L	1
4,4'-DDE	0.010	UJ	0.020	0.010	0.0010	ug/L	1	UJ	UJ	0.023	0.012	0.0011	ug/L	1
Dieldrin	0.010	UJ	0.020	0.010	0.0013	ug/L	1	UJ	UJ	0.023	0.012	0.0015	ug/L	1
Endrin	0.010	UJ	0.020	0.010	0.0017	ug/L	1	UJ	UJ	0.023	0.012	0.002	ug/L	1
4,4'-DDD	0.010	UJ	0.020	0.010	0.0018	ug/L	1	0.012	UJ	0.023	0.012	0.0021	ug/L	1
Endosulfan II	0.010	UJ	0.020	0.010	0.0012	ug/L	1	0.012	UJ	0.023	0.012	0.0013	ug/L	1
4,4'-DDT	0.010	UJ	0.020	0.010	0.0018	ug/L	1	0.012	UJ	0.023	0.012	0.0021	ug/L	1
Endrin Aldehyde	0.010	UJ	0.020	0.010	0.0013	ug/L	1	0.012	UJ	0.023	0.012	0.0014	ug/L	1
Endosulfan Sulfate	0.010	UJ	0.020	0.010	0.0014	ug/L	1	0.012	UJ	0.023	0.012	0.0016	ug/L	1
Methoxychlor	0.051	UJ	0.10	0.051	0.0017	ug/L	1	0.058	UJ	0.12	0.058	0.002	ug/L	1
Endrin Ketone	0.010	UJ	0.020	0.010	0.0016	ug/L	1	0.012	UJ	0.023	0.012	0.0018	ug/L	1
2,4'-DDD	0.010	UJ	0.020	0.010	0.0049	ug/L	1	0.012	UJ	0.023	0.012	0.0056	ug/L	1
2,4'-DDE	0.010	UJ	0.020	0.010	0.0047	ug/L	1	0.012	UJ	0.023	0.012	0.0053	ug/L	1
2,4'-DDT	0.010	UJ	0.020	0.010	0.0047	ug/L	1	0.012	UJ	0.023	0.012	0.0053	ug/L	1
Total DDDs	0.020	UJ	0.041	0.020	0.0018	ug/L	1	0.023	UJ	0.046	0.023	0.0021	ug/L	1
Total DDEs	0.020	UJ	0.041	0.020	0.0010	ug/L	1	0.023	UJ	0.046	0.023	0.0011	ug/L	1
Total DDTs	0.020	UJ	0.041	0.020	0.0018	ug/L	1	0.023	UJ	0.046	0.023	0.0021	ug/L	1
Oxychlordane	0.010	UJ	0.020	0.010	0.0053	ug/L	1	0.012	UJ	0.023	0.012	0.006	ug/L	1
Method: PSEP/Krone - Organotins (GC/MS)														
Analyte	Result	Qualifier	LOQ	LOD	MDL	Unit	Dil Fac	Result	Qualifier	LOQ	LOD	MDL	Unit	Dil Fac
Dibutyltin	0.16	U	0.32		0.059	ug/L	1	0.16	U	0.32		0.059	ug/L	1
Monobutyltin	0.13	UJ	0.32		0.064	ug/L	1	0.13	UJ	0.32		0.064	ug/L	1
Tetra-n-butyltin	0.21	U	0.32		0.11	ug/L	1	0.21	U	0.32		0.11	ug/L	1
Tributyltin	0.19	U	0.32		0.048	ug/L	1	0.19	U	0.32		0.048	ug/L	1
Method: NWTPH-Gx - Gasoline-Range Petroleum Products (GC)														
Analyte	Result	Qualifier	LOQ	LOD	MDL	Unit	Dil Fac	Result	Qualifier	LOQ	LOD	MDL	Unit	Dil Fac
Gasoline	0.20	U	0.25		0.10	ug/L	1	0.20	U	0.25		0.10	ug/L	1
Method: NWTPH-Dx - Diesel-Range Petroleum Products (GC)														
Analyte	Result	Qualifier	LOQ	LOD	MDL	Unit	Dil Fac	Result	Qualifier	LOQ	LOD	MDL	Unit	Dil Fac
#2 Diesel (C10-C24)	**0.20**		**0.10**		**0.060**	**ug/L**	**10**	**0.20**		**0.10**		**0.060**	**ug/L**	**10**
General Chemistry														
Analyte	Result	Qualifier	LOQ	LOD	MDL	Unit		Result	Qualifier	LOQ	LOD	MDL	Unit	
Total Hardness, EPA 200.8	**8310**		**130**	**110**	**17**	**µg/L**		**6530**		**130**	**110**	**17**	**µg/L**	
Total Suspended Solids, SM	**54**		**5.0**	**3.5**	**1.8**	**mg/L**		**2.4**	**J**	**4.0**	**2.8**	**1.4**	**mg/L**	
Dissolved Organic Carbon,	**4.3**		**1.0**	**0.50**	**0.32**	**mg/L**		**1.7**		**1.0**	**0.50**	**0.32**	**mg/L**	
Method:1668C - Polychorinated Biphenyl Congeners (HRGC/HRMS)														
Analyte	Result	Qualifier	LOQ	LOD	MDL	Unit	Dil Fac	Result	Qualifier	LOQ		DL	Unit	Dil Fac
PCB-1	11	U	220		0.80	pg/L	1	11	U	220		0.94	pg/L	1
PCB-2	22	U	220		0.68	pg/L	1	22	U	220		0.75	pg/L	1
PCB-3	11	U	220		0.69	pg/L	1	11	U	220		0.73	pg/L	1
PCB-4	27	U	220		24	pg/L	1	28	U	220		32	pg/L	1
PCB-5	27	U	220		15	pg/L	1	28	U	220		21	pg/L	1
PCB-6	27	U	220		12	pg/L	1	28	U	220		17	pg/L	1
PCB-7	27	U	220		14	pg/L	1	28	U	220		19	pg/L	1
PCB-8	27	U	220		11	pg/L	1	28	U	220		16	pg/L	1

Filter Blank					
Result	Qualifier	LOQ	LOD	MDL	Unit
0.50	U	1.0	0.50	0.32	mg/L

PCB-9	54	U	220		13	pg/L	1	56	U	220		18	pg/L	1
PCB-10	54	U	220		18	pg/L	1	56	U	220		23	pg/L	1
PCB-11	**73**	**J**	**220**		**13**	**pg/L**	**1**	28	U	220		18	pg/L	1
PCB-12	43	U	430		14	pg/L	1	45	U	450		20	pg/L	1
PCB-13	43	U	430		14	pg/L	1	45	U	450		20	pg/L	1
PCB-14	27	U	220		14	pg/L	1	28	U	220		20	pg/L	1
PCB-15	22	U	220		14	pg/L	1	22	U	220		20	pg/L	1
PCB-16	**10**	**J**	**220**		**3.9**	**pg/L**	**1**	56	U	220		4.6	pg/L	1
PCB-17	**8.4**	**J**	**220**		**3.9**	**pg/L**	**1**	11	U	220		4.6	pg/L	1
PCB-18	**15**	**J**	**430**		**2.6**	**pg/L**	**1**	56	U	450		3.1	pg/L	1
PCB-19	11	U	220		4.2	pg/L	1	11	U	220		5.0	pg/L	1
PCB-20	**24**	**J**	**430**		**1.8**	**pg/L**	**1**	**8.3**	**J**	**450**		**1.5**	**pg/L**	**1**
PCB-21	**13**	**J**	**430**		**1.8**	**pg/L**	**1**	**7.2**	**J**	**450**		**1.5**	**pg/L**	**1**
PCB-22	**7.7**	**J**	**220**		**1.7**	**pg/L**	**1**	**4.4**	**J**	**220**		**1.5**	**pg/L**	**1**
PCB-23	22	U	220		1.8	pg/L	1	22	U	220		1.6	pg/L	1
PCB-24	22	U	220		2.7	pg/L	1	22	U	220		3.2	pg/L	1
PCB-25	22	U	220		1.5	pg/L	1	22	U	220		1.3	pg/L	1
PCB-26	**4.6**	**J**	**430**		**1.9**	**pg/L**	**1**	45	U	450		1.6	pg/L	1
PCB-27	22	U	220		2.7	pg/L	1	22	U	220		3.2	pg/L	1
PCB-28	**24**	**J**	**430**		**1.8**	**pg/L**	**1**	**8.3**	**J**	**450**		**1.5**	**pg/L**	**1**
PCB-29	**4.6**	**J**	**430**		**1.9**	**pg/L**	**1**	45	U	450		1.6	pg/L	1
PCB-30	**15**	**J**	**430**		**2.6**	**pg/L**	**1**	56	U	450		3.1	pg/L	1
PCB-31	**22**	**J**	**220**		**1.6**	**pg/L**	**1**	**7.7**	**J**	**220**		**1.4**	**pg/L**	**1**
PCB-32	**5.4**	**J**	**220**		**2.5**	**pg/L**	**1**	11	U	220		2.9	pg/L	1
PCB-33	**13**	**J**	**430**		**1.8**	**pg/L**	**1**	**7.2**	**J**	**450**		**1.5**	**pg/L**	**1**
PCB-34	22	U	220		1.9	pg/L	1	22	U	220		1.6	pg/L	1
PCB-35	**4.9**	**J**	**220**		**1.9**	**pg/L**	**1**	11	U	220		1.6	pg/L	1
PCB-36	11	U	220		1.6	pg/L	1	11	U	220		1.4	pg/L	1
PCB-37	**13**	**J**	**220**		**2.0**	**pg/L**	**1**	**4.5**	**J**	**220**		**1.7**	**pg/L**	**1**
PCB-38	22	U	220		1.8	pg/L	1	22	U	220		1.6	pg/L	1
PCB-39	11	U	220		1.9	pg/L	1	11	U	220		1.6	pg/L	1
PCB-40	**36**	**J**	**430**		**4.2**	**pg/L**	**1**	**3.8**	**J**	**450**		**1.0**	**pg/L**	**1**
PCB-41	11	U	220		6.9	pg/L	1	11	U	220		1.6	pg/L	1
PCB-42	**18**	**J**	**220**		**5.1**	**pg/L**	**1**	**2.1**	**J**	**220**		**1.2**	**pg/L**	**1**
PCB-43	11	U	220		4.6	pg/L	1	11	U	220		1.1	pg/L	1
PCB-44	**180**	**J**	**650**		**4.2**	**pg/L**	**1**	**10**	**UJ**	**670**		**1.0**	**pg/L**	**1**
PCB-45	**11**	**J**	**220**		**5.9**	**pg/L**	**1**	22	U	220		1.4	pg/L	1
PCB-46	22	U	220		6.0	pg/L	1	22	U	220		1.4	pg/L	1
PCB-47	**180**	**J**	**650**		**4.2**	**pg/L**	**1**	**10**	**UJ**	**670**		**1.0**	**pg/L**	**1**
PCB-48	22	U	220		5.1	pg/L	1	**2.3**	**J**	**220**		**1.2**	**pg/L**	**1**
PCB-49	**87**	**J**	**430**		**4.1**	**pg/L**	**1**	**3.4**	**J**	**450**		**0.97**	**pg/L**	**1**
PCB-50	**12**	**J**	**430**		**4.5**	**pg/L**	**1**	45	U	450		1.1	pg/L	1
PCB-51	22	U	220		4.5	pg/L	1	22	U	220		1.1	pg/L	1
PCB-52	**390**		**220**		**4.4**	**pg/L**	**1**	**9.7**	**UJ**	**220**		**1.0**	**pg/L**	**1**
PCB-53	**12**	**J**	**430**		**4.5**	**pg/L**	**1**	45	U	450		1.1	pg/L	1
PCB-54	11	U	220		1.8	pg/L	1	11	U	220		2.0	pg/L	1
PCB-55	11	U	220		3.8	pg/L	1	11	U	220		0.63	pg/L	1
PCB-56	**50**	**J**	**220**		**4.2**	**pg/L**	**1**	**2.4**	**J**	**220**		**0.69**	**pg/L**	**1**
PCB-57	**27**	**J**	**220**		**4.2**	**pg/L**	**1**	11	U	220		0.7	pg/L	1
PCB-58	22	U	220		3.8	pg/L	1	22	U	220		0.63	pg/L	1
PCB-59	65	U	650		3.8	pg/L	1	67	U	670		0.9	pg/L	1
PCB-60	**26**	**J**	**220**		**4.8**	**pg/L**	**1**	**1.9**	**J**	**220**		**0.8**	**pg/L**	**1**
PCB-61	**350**	**J**	**860**		**4.0**	**pg/L**	**1**	**11**	**J**	**890**		**0.66**	**pg/L**	**1**
PCB-62	65	U	650		3.8	pg/L	1	67	U	670		0.9	pg/L	1
PCB-63	22	U	220		4.6	pg/L	1	22	U	220		0.77	pg/L	1
PCB-64	**59**	**J**	**220**		**3.6**	**pg/L**	**1**	**4.2**	**J**	**220**		**0.86**	**pg/L**	**1**
PCB-65	**180**	**J**	**650**		**4.2**	**pg/L**	**1**	**10**	**J**	**670**		**1.0**	**pg/L**	**1**
PCB-66	**110**	**J**	**220**		**4.1**	**pg/L**	**1**	**5.6**	**J**	**220**		**0.68**	**pg/L**	**1**
PCB-67	22	U	220		3.5	pg/L	1	22	U	220		0.58	pg/L	1
PCB-68	22	U	220		4.0	pg/L	1	22	U	220		0.67	pg/L	1
PCB-69	**87**	**J**	**430**		**4.1**	**pg/L**	**1**	**3.4**	**J**	**450**		**0.97**	**pg/L**	**1**

PCB-70	**350**	**J**	**860**		**4.0**	**pg/L**	**1**	**11**	**J**	**890**		**0.66**	**pg/L**	**1**
PCB-71	**36**	**J**	**430**		**4.2**	**pg/L**	**1**	**3.8**	**J**	**450**		**1.0**	**pg/L**	**1**
PCB-72	22	U	220		3.9	pg/L	1	22	U	220		0.65	pg/L	1
PCB-73	22	U	220		3.5	pg/L	1	22	U	220		0.83	pg/L	1
PCB-74	**350**	**J**	**860**		**4.0**	**pg/L**	**1**	**11**	**J**	**890**		**0.66**	**pg/L**	**1**
PCB-75	65	U	650		3.8	pg/L	1	67	U	670		0.90	pg/L	1
PCB-76	**350**	**J**	**860**		**4.0**	**pg/L**	**1**	**11**	**J**	**890**		**0.66**	**pg/L**	**1**
PCB-77	**51**		**22**		**5.2**	**pg/L**	**1**	11	U	22		0.86	pg/L	1
PCB-78	11	U	220		4.5	pg/L	1	11	U	220		0.75	pg/L	1
PCB-79	**27**	**J**	**220**		**3.7**	**pg/L**	**1**	11	U	220		0.62	pg/L	1
PCB-80	11	U	220		4.1	pg/L	1	11	U	220		0.68	pg/L	1
PCB-81	**16**	**J**	**22**		**5.0**	**pg/L**	**1**	11	U	22		0.84	pg/L	1
PCB-82	**97**	**J**	**220**		**38**	**pg/L**	**1**	11	U	220		0.86	pg/L	1
PCB-83	**41**	**J**	**220**		**40**	**pg/L**	**1**	22	U	220		0.92	pg/L	1
PCB-84	**290**		**220**		**43**	**pg/L**	**1**	**2.6**	**J**	**220**		**0.98**	**pg/L**	**1**
PCB-85	**150**	**J**	**650**		**29**	**pg/L**	**1**	**1.5**	**J**	**670**		**0.68**	**pg/L**	**1**
PCB-86	**860**	**J**	**1300**		**29**	**pg/L**	**1**	**6.9**	**J**	**1300**		**0.67**	**pg/L**	**1**
PCB-87	**860**	**J**	**1300**		**29**	**pg/L**	**1**	**6.9**	**J**	**1300**		**0.67**	**pg/L**	**1**
PCB-88	**130**	**J**	**430**		**37**	**pg/L**	**1**	22	U	450		0.85	pg/L	1
PCB-89	11	U	220		35	pg/L	1	11	U	220		0.8	pg/L	1
PCB-90	**2100**		**650**		**32**	**pg/L**	**1**	**11**	**J**	**670**		**0.73**	**pg/L**	**1**
PCB-91	**130**	**J**	**430**		**37**	**pg/L**	**1**	22	U	450		0.85	pg/L	1
PCB-92	**290**		**220**		**38**	**pg/L**	**1**	**1.5**	**J**	**220**		**0.87**	**pg/L**	**1**
PCB-93	22	U	430		37	pg/L	1	22	U	450		0.85	pg/L	1
PCB-94	22	U	220		41	pg/L	1	22	U	220		0.94	pg/L	1
PCB-95	**1100**		**220**		**36**	**pg/L**	**1**	**10**	**J**	**220**		**0.83**	**pg/L**	**1**
PCB-96	**6.9**	**J**	**220**		**0.36**	**pg/L**	**1**	22	U	220		0.29	pg/L	1
PCB-97	**860**	**J**	**1300**		**29**	**pg/L**	**1**	**6.9**	**J**	**1300**		**0.67**	**pg/L**	**1**
PCB-98	22	U	430		30	pg/L	1	22	U	450		0.69	pg/L	1
PCB-99	**390**		**220**		**28**	**pg/L**	**1**	**3.2**	**J**	**220**		**0.64**	**pg/L**	**1**
PCB-100	22	U	430		37	pg/L	1	22	U	450		0.85	pg/L	1
PCB-101	**2100**		**650**		**32**	**pg/L**	**1**	**11**	**J**	**670**		**0.73**	**pg/L**	**1**
PCB-102	22	U	430		30	pg/L	1	22	U	450		0.69	pg/L	1
PCB-103	11	U	220		34	pg/L	1	11	U	220		0.77	pg/L	1
PCB-104	11	U	220		0.36	pg/L	1	11	U	220		0.27	pg/L	1
PCB-105	**540**		**30**		**30**	**pg/L**	**1**	**4.0**	**J**	**22**		**0.69**	**pg/L**	**1**
PCB-106	22	U	220		27	pg/L	1	22	U	220		0.61	pg/L	1
PCB-107	**69**	**J**	**430**		**27**	**pg/L**	**1**	22	U	450		0.61	pg/L	1
PCB-108	**860**	**J**	**1300**		**29**	**pg/L**	**1**	**6.9**	**J**	**1300**		**0.67**	**pg/L**	**1**
PCB-109	**130**	**J**	**220**		**23**	**pg/L**	**1**	11	U	220		0.52	pg/L	1
PCB-110	**1900**		**430**		**23**	**pg/L**	**1**	**12**	**J**	**450**		**0.53**	**pg/L**	**1**
PCB-111	22	U	220		26	pg/L	1	22	U	220		0.6	pg/L	1
PCB-112	11	U	220		22	pg/L	1	11	U	220		0.51	pg/L	1
PCB-113	**2100**		**650**		**32**	**pg/L**	**1**	**11**	**J**	**670**		**0.73**	**pg/L**	**1**
PCB-114	11	U	29		29	pg/L	1	11	U	22		0.68	pg/L	1
PCB-115	**1900**		**430**		**23**	**pg/L**	**1**	**12**	**J**	**450**		**0.53**	**pg/L**	**1**
PCB-116	**150**	**J**	**650**		**29**	**pg/L**	**1**	**1.5**	**J**	**670**		**0.68**	**pg/L**	**1**
PCB-117	**150**	**J**	**650**		**29**	**pg/L**	**1**	**1.5**	**J**	**670**		**0.68**	**pg/L**	**1**
PCB-118	**1700**		**28**		**28**	**pg/L**	**1**	**8.5**	**J**	**22**		**0.64**	**pg/L**	**1**
PCB-119	**860**	**J**	**1300**		**29**	**pg/L**	**1**	**6.9**	**J**	**1300**		**0.67**	**pg/L**	**1**
PCB-120	11	U	220		22	pg/L	1	11	U	220		0.51	pg/L	1
PCB-121	11	U	220		23	pg/L	1	11	U	220		0.53	pg/L	1
PCB-122	11	U	220		31	pg/L	1	11	U	220		0.71	pg/L	1
PCB-123	11	U	29		29	pg/L	1	11	U	22		0.67	pg/L	1
PCB-124	**69**	**J**	**430**		**27**	**pg/L**	**1**	22	U	450		0.61	pg/L	1
PCB-125	**860**	**J**	**1300**		**29**	**pg/L**	**1**	**6.9**	**J**	**1300**		**0.67**	**pg/L**	**1**
PCB-126	**150**		**32**		**32**	**pg/L**	**1**	11	U	22		0.74	pg/L	1
PCB-127	22	U	220		28	pg/L	1	22	U	220		0.63	pg/L	1
PCB-128	**1700**		**430**		**55**	**pg/L**	**1**	**3.8**	**J**	**450**		**0.54**	**pg/L**	**1**
PCB-129	**25000**		**650**		**61**	**pg/L**	**1**	**47**	**J**	**670**		**0.6**	**pg/L**	**1**
PCB-130	**840**		**220**		**80**	**pg/L**	**1**	**1.2**	**J**	**220**		**0.79**	**pg/L**	**1**

PCB-131	**81**	**J**	**220**		**74**	**pg/L**	**1**	22	U	220		0.73	pg/L	1
PCB-132	**4300**		**220**		**69**	**pg/L**	**1**	**11**	**J**	**220**		**0.68**	**pg/L**	**1**
PCB-133	**160**	**J**	**220**		**65**	**pg/L**	**1**	11	U	220		0.64	pg/L	1
PCB-134	**420**	**J**	**430**		**73**	**pg/L**	**1**	**1.3**	**J**	**450**		**0.71**	**pg/L**	**1**
PCB-135	**4300**		**430**		**63**	**pg/L**	**1**	**11**	**J**	**450**		**0.62**	**pg/L**	**1**
PCB-136	**820**		**220**		**51**	**pg/L**	**1**	**4.2**	**J**	**220**		**0.5**	**pg/L**	**1**
PCB-137	**90**	**J**	**220**		**68**	**pg/L**	**1**	22	U	220		0.67	pg/L	1
PCB-138	**25000**		**650**		**61**	**pg/L**	**1**	**47**	**J**	**670**		**0.6**	**pg/L**	**1**
PCB-139	22	U	430		59	pg/L	1	22	U	450		0.58	pg/L	1
PCB-140	22	U	430		59	pg/L	1	22	U	450		0.58	pg/L	1
PCB-141	**7200**		**220**		**72**	**pg/L**	**1**	**12**	**J**	**220**		**0.71**	**pg/L**	**1**
PCB-142	11	U	220		76	pg/L	1	11	U	220		0.75	pg/L	1
PCB-143	**420**	**J**	**430**		**73**	**pg/L**	**1**	**1.3**	**J**	**450**		**0.71**	**pg/L**	**1**
PCB-144	**690**		**220**		**65**	**pg/L**	**1**	**1.2**	**J**	**220**		**0.64**	**pg/L**	**1**
PCB-145	11	U	220		43	pg/L	1	11	U	220		0.43	pg/L	1
PCB-146	**2400**		**220**		**54**	**pg/L**	**1**	**4**	**J**	**220**		**0.54**	**pg/L**	**1**
PCB-147	**11000**		**430**		**57**	**pg/L**	**1**	**26**	**J**	**450**		**0.56**	**pg/L**	**1**
PCB-148	11	U	220		64	pg/L	1	11	U	220		0.63	pg/L	1
PCB-149	**11000**		**430**		**57**	**pg/L**	**1**	**26**	**J**	**450**		**0.56**	**pg/L**	**1**
PCB-150	22	U	220		48	pg/L	1	22	U	220		0.47	pg/L	1
PCB-151	**4300**		**430**		**63**	**pg/L**	**1**	**11**	**J**	**450**		**0.62**	**pg/L**	**1**
PCB-152	11	U	220		42	pg/L	1	11	U	220		0.41	pg/L	1
PCB-153	**19000**		**430**		**48**	**pg/L**	**1**	**40**	**J**	**450**		**0.48**	**pg/L**	**1**
PCB-154	11	U	220		59	pg/L	1	11	U	220		0.58	pg/L	1
PCB-155	11	U	220		43	pg/L	1	11	U	220		0.42	pg/L	1
PCB-156	**2200**		**54**		**54**	**pg/L**	**1**	**4.4**	**J**	**45**		**0.56**	**pg/L**	**1**
PCB-157	**2200**		**54**		**54**	**pg/L**	**1**	**4.4**	**J**	**45**		**0.56**	**pg/L**	**1**
PCB-158	**2400**		**220**		**50**	**pg/L**	**1**	**4.2**	**J**	**220**		**0.49**	**pg/L**	**1**
PCB-159	**470**		**220**		**34**	**pg/L**	**1**	**0.76**	**J**	**220**		**0.36**	**pg/L**	**1**
PCB-160	22	U	220		59	pg/L	1	22	U	220		0.58	pg/L	1
PCB-161	11	U	220		48	pg/L	1	11	U	220		0.48	pg/L	1
PCB-162	**45**	**J**	**220**		**38**	**pg/L**	**1**	22	U	220		0.41	pg/L	1
PCB-163	**25000**		**650**		**61**	**pg/L**	**1**	**47**	**J**	**670**		**0.6**	**pg/L**	**1**
PCB-164	**2000**		**220**		**50**	**pg/L**	**1**	**3.7**	**J**	**220**		**0.49**	**pg/L**	**1**
PCB-165	11	U	220		54	pg/L	1	11	U	220		0.53	pg/L	1
PCB-166	**1700**		**430**		**55**	**pg/L**	**1**	**3.8**	**J**	**450**		**0.54**	**pg/L**	**1**
PCB-167	**1000**		**38**		**38**	**pg/L**	**1**	**2.3**	**J**	**22**		**0.41**	**pg/L**	**1**
PCB-168	**19000**		**430**		**48**	**pg/L**	**1**	**40**	**J**	**450**		**0.48**	**pg/L**	**1**
PCB-169	11	UM	41		41	pg/L	1	11	U	22		0.48	pg/L	1
PCB-170	**24000**		**430**		**260**	**pg/L**	**1**	**44**	**J**	**220**		**1.3**	**pg/L**	**1**
PCB-171	**5400**		**430**		**220**	**pg/L**	**1**	**8.2**	**J**	**450**		**1.1**	**pg/L**	**1**
PCB-172	**4000**		**220**		**220**	**pg/L**	**1**	**6.1**	**J**	**220**		**1.1**	**pg/L**	**1**
PCB-173	**5400**		**430**		**220**	**pg/L**	**1**	**8.2**	**J**	**450**		**1.1**	**pg/L**	**1**
PCB-174	**20000**		**220**		**200**	**pg/L**	**1**	**31**	**J**	**220**		**1**	**pg/L**	**1**
PCB-175	**700**		**220**		**3.5**	**pg/L**	**1**	**1.8**	**J**	**220**		**0.92**	**pg/L**	**1**
PCB-176	**1300**	**M**	**220**		**2.6**	**pg/L**	**1**	**2.1**	**J**	**220**		**0.69**	**pg/L**	**1**
PCB-177	**9900**		**220**		**200**	**pg/L**	**1**	**16**	**J**	**220**		**1.0**	**pg/L**	**1**
PCB-178	**3000**		**220**		**3.6**	**pg/L**	**1**	**4.4**	**J**	**220**		**0.94**	**pg/L**	**1**
PCB-179	**3500**		**220**		**2.3**	**pg/L**	**1**	**6.3**	**J**	**220**		**0.59**	**pg/L**	**1**
PCB-180	**52000**		**860**		**180**	**pg/L**	**2**	**92**	**J**	**450**		**0.89**	**pg/L**	**1**
PCB-181	11	U	220		180	pg/L	1	11	U	220		0.89	pg/L	1
PCB-182	**86**	**J**	**220**		**3.0**	**pg/L**	**1**	11	U	220		0.80	pg/L	1
PCB-183	**10000**		**220**		**170**	**pg/L**	**1**	**17**	**J**	**220**		**0.87**	**pg/L**	**1**
PCB-184	22	U	220		2.4	pg/L	1	22	U	220		0.64	pg/L	1
PCB-185	**1900**		**220**		**220**	**pg/L**	**1**	**3.5**	**J**	**220**		**1.1**	**pg/L**	**1**
PCB-186	11	U	220		2.2	pg/L	1	11	U	220		0.57	pg/L	1
PCB-187	**17000**		**220**		**2.8**	**pg/L**	**1**	**27**	**J**	**220**		**0.73**	**pg/L**	**1**
PCB-188	11	U	220		2.4	pg/L	1	11	U	220		0.61	pg/L	1
PCB-189	**860**		**22**		**3.3**	**pg/L**	**1**	**1.7**	**J**	**22**		**0.54**	**pg/L**	**1**
PCB-190	**5800**		**220**		**170**	**pg/L**	**1**	**9.7**	**J**	**220**		**0.88**	**pg/L**	**1**
PCB-191	**1100**		**220**		**170**	**pg/L**	**1**	**1.8**	**J**	**220**		**0.85**	**pg/L**	**1**

PCB-192	22	U	220		150	pg/L	1	22	U	220		0.75	pg/L	1
PCB-193	**52000**		**860**		**180**	**pg/L**	**2**	**92**	**J**	**450**		**0.89**	**pg/L**	**1**
PCB-194	**12000**		**220**		**6.2**	**pg/L**	**1**	**21**	**J**	**220**		**0.44**	**pg/L**	**1**
PCB-195	**4500**		**220**		**6.0**	**pg/L**	**1**	**7.3**	**J**	**220**		**0.43**	**pg/L**	**1**
PCB-196	**6800**		**220**		**18**	**pg/L**	**1**	**12**	**J**	**220**		**0.54**	**pg/L**	**1**
PCB-197	**250**		**220**		**12**	**pg/L**	**1**	**0.47**	**J**	**220**		**0.36**	**pg/L**	**1**
PCB-198	**12000**		**430**		**16**	**pg/L**	**1**	**21**	**J**	**450**		**0.48**	**pg/L**	**1**
PCB-199	**12000**		**430**		**16**	**pg/L**	**1**	**21**	**J**	**450**		**0.48**	**pg/L**	**1**
PCB-200	**1600**		**220**		**14**	**pg/L**	**1**	**2.5**	**J**	**220**		**0.43**	**pg/L**	**1**
PCB-201	**1200**		**220**		**14**	**pg/L**	**1**	**1.9**	**J**	**220**		**0.42**	**pg/L**	**1**
PCB-202	**1300**		**220**		**12**	**pg/L**	**1**	**3.1**	**J**	**220**		**0.38**	**pg/L**	**1**
PCB-203	**7200**		**220**		**15**	**pg/L**	**1**	**13**	**J**	**220**		**0.44**	**pg/L**	**1**
PCB-204	22	U	220		12	pg/L	1	22	U	220		0.35	pg/L	1
PCB-205	**790**		**220**		**5.9**	**pg/L**	**1**	**1.4**	**J**	**220**		**0.41**	**pg/L**	**1**
PCB-206	**2800**		**220**		**2.0**	**pg/L**	**1**	**5.9**	**J**	**220**		**0.4**	**pg/L**	**1**
PCB-207	**350**		**220**		**1.6**	**pg/L**	**1**	**1.3**	**J**	**220**		**0.33**	**pg/L**	**1**
PCB-208	**420**		**220**		**1.7**	**pg/L**	**1**	**0.89**	**J**	**220**		**0.36**	**pg/L**	**1**
PCB-209	**58**	**J**	**220**		**0.3**	**pg/L**	**1**	**0.93**	**J**	**220**		**0.17**	**pg/L**	**1**